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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/776,715	02/10/2004	Nelson Nahum	01472/LH	2802

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FRISHAUF, HOLTZ, GOODMAN & CHICK, PC
220 Fifth Avenue
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NEW YORK, NY 10001-7708

EXAMINER

CHOI, WOO H

ART UNIT	PAPER NUMBER
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2189

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/27/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<p align="center">Office Action Summary</p>	<p>Application No.</p> <p align="center">10/776,715</p>	<p>Applicant(s)</p> <p align="center">NAHUM, NELSON</p>	
	<p>Examiner</p> <p align="center">Woo H. Choi</p>	<p>Art Unit</p> <p align="center">2189</p>	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-48 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-48 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| <p>1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)</p> <p>2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</p> <p>3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date _____</p> | <p>4) <input type="checkbox"/> Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____</p> <p>5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)</p> <p>6) <input type="checkbox"/> Other: _____</p> |
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DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1 – 3, 5 – 27, and 29 – 48 are rejected under 35 U.S.C. 102(b) as being anticipated by Ohran (US Patent No. 5,835,953).

3. With respect to claims 1, 16 – 18, 20, 25, 40 – 42, and 44, Ohran discloses a system for asynchronously mirroring a selected data object from at least one local storage device (SDL) into at least one remote storage device (SDRx), the at least one local storage device being coupled to a first processing facility (HL), and the at least one remote storage device being coupled to a second processing facility (HR), and where the at least one local storage device, the at least one remote storage device, the first and the second processing facility are coupled to a network connectivity comprising pluralities of users, of processing facilities and of storage devices (figure 1), the system comprising:

a mirroring functionality running in the first and in the second processing facility, the mirroring functionality comprising:

a freeze procedure for freezing the selected data object (figure 2, T1 snapshot), a copy procedure for copying the frozen selected data object into the at least one remote storage device (figure 5, 104, 106), the selected data object being used and updated in parallel to running of the mirroring functionality (figure 2), and the mirroring functionality being run by default command, for copying updates to the selected data object, unless receiving command for mirroring break (the snapshot and copying functions are performed as default backup operations, unless interrupted), whereby the selected data object residing in the at least one local storage device is copied and sequentially updated into the at least one remote storage device.

4. With respect to claims 2 and 26, the mirroring functionality further comprises:

the freeze procedure being applied for freezing the selected data object as a source volume (SV) (figure 3, 22, 48, alternatively 20), at least one local auxiliary volume (AVL) to which updates addressed to the selected data object are redirected (20 + 52, alternatively 22 + 52, updates are sent to 20 after a snapshot; updates are also sent to 22 at the time of snapshot), each single data object out of the selected data object corresponding to one local auxiliary volume out of the at least one local auxiliary volume, at least one remote volume being created in each remote storage device out of the at least one remote storage device, to correspond to each one local auxiliary volume created, **a resulting source volume** (not necessarily the same as SV above, 20, 22, or 20+22) being formed in the at least one local storage device to comprise the frozen selected data object and the at least one local auxiliary volume, and the copy procedure being applied for copying the frozen selected data object from the at least one resulting volume into the at least one remote storage device (figure 7B, see also col. 5, line 39 – col. 6, line 18).

5. With respect to claims 3, 5 – 11, 27, 29 – 30, see figure 1. Snapshot backup operations are performed on multiple storage devices on multiple systems with each device containing multiple data objects (files, for example), which appears to cover different permutations claimed. Also note that the backup operation applies single data object (a large logical volume) from the to all data objects stored in 20 simultaneously.

6. With respect to claims 12 – 15, 19, 22 – 24, 36 – 39, 43, 45 – 48, see rejections of claims 1 and 2 above. These claims cover repetitions of claims 1 and 2 at different time intervals. Figures 2 and 7 disclose the claimed operations at sequential time intervals. Synchronization of volumes is disclosed in figure 7 and its corresponding text in the specification.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 4 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohran in view of Jones (US Patent Application Publication No. 2002/0156971, hereinafter “Jones”).

Ohran discloses all of the limitations of the parent claim as discussed above. However, Ohran does not specifically disclose that mirror functionality is configured to work both ways,

from local device to remote device, and vice-versa. On the other hand Jones discloses a mirroring system that works both ways (figure 4). It would have been obvious to one of ordinary skill in the art, having the teachings of Jones and Ohran before him at the time the invention was made, to configure Ohran's system to mirror data both ways as taught by Jones. Mirroring data both ways increases reliability without increasing the number of disks (Jones, paragraph 10). Mirroring data both way also allows the two systems of Ohran as independent primary system backing up each other which in turn provides for more efficient use of computing resources without adding additional processing systems.

Response to Arguments

9. Applicant's arguments filed November 22, 2006, have been fully considered but they are not persuasive. Applicant's lengthy discussion that focuses on the differences between Ohran's and Applicant's disclosures obscures and distracts from real arguments that should focus on what is claimed and how elements of Ohran's disclosure read or do not read on the limitations that are actually in the claims. Applicant's first relevant argument is that Ohran does not disclose "a mirroring functionality" having "a freeze procedure for freezing the selected data object", but rather takes a snapshot (amendment, page 84). The Examiner disagrees. Ohran clearly teaches "a mirroring functionality." Ohran discloses a backup system that mirrors a primary volume on a remote secondary volume (see figure 3). Applicant admits that Ohran teaches mirroring on page 77, in a statement that attempts to distinguish an "asynchronous" mirroring functionality from the "traditional" mirroring functionality. Merely appending the word "asynchronous" to a name of a function recited in a preamble without changing any of the steps or structures in the body of

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a claim, does not make the claim patentably distinct from the prior claim without the word “asynchronous.” The actual steps, or structures, that perform the function have not changed at all. Moreover, like most backup systems, other than synchronous RAID-1 type of mirroring backup systems that writes to the primary and the backup system simultaneously, Ohran’s backup system is an asynchronous system.

As to the “freezing procedure” and the “copy procedure” limitations, Ohran clearly teaches “freezing” and “copying.” Ohran’s snapshot system freezes the state of a volume and objects contained in the volume at the point in time when the snapshot is taken. A copy of the collection of changes made since the last snapshot (i.e., objects frozen at the time of the latest snapshot) is sent to the backup system, to be incorporated into the backup to mirror the primary system. In spite of Applicant’s allegation to the contrary, Applicant implicitly admits, at page 85, that Ohran teaches these procedures but argues that there is a difference because the ‘claimed invention is a “forward snapshot,” while Ohran uses a “backward snapshot.”’ Applicant also argues that this “difference” permits certain abilities not available with Ohran. However, the actual language of the claim does not reflect this “difference”, if any. Nor has Applicant claimed any of the supposed abilities alleged not to be available with Ohran.

10. With respect to Applicant’s arguments regarding the rejection of claim 2, Applicant’s first real argument is that Ohran does not disclose “the creation of source volume SV.” Creation of a source volume SV is not a claimed feature. The Ohran’s system shown in figure 3 clearly meets the limitation “the freezing procedure being applied for freezing the selected data objects as a source volume.” Ohran discloses freezing the primary volume and storing the frozen image

of the objects in the snapshot storage that serves as a source volume for sending a copy of the frozen image to the backup system. Applicant also argues that "Ohran does not create an auxiliary volume to which updates are directed but continues to send updates to the selected data after having taken a snapshot (see page 90). However, the claim does not require that a new auxiliary volume be created after a snapshot or freezing. The claim merely requires that there be a correspondence between at least one remote volume being created and an auxiliary volume created. Timing of the creation of the volumes is not specified at all. Ohran disclose the volumes that correspond to the claimed volumes. They would not exist in Ohran disclosure if they were not created. Applicant's arguments, on pages 92-96, seem to rely on the assumption that the source volume recited in line 4 is the same as the one recited in lines 13-14 and that this source volume that contains an auxiliary volume is created when the freeze procedure is applied. However, the claimed local source volume SV is not required to contain the auxiliary volume AVL. The claim recites a source volume SV in line 4. The claim also recites at least one resulting source volume in lines 13-14 (as to what this source volume is a result of is not claimed). This "at least one source volume" is not required to be the same source volume SV as the one recited in line 4 because the second recitation of "source volume" does not use "the" or "said" to indicate that it is referring to the source volume recited previously. And the claim does not require that the claimed volumes be created as a result of the freeze procedure being applied. The second instance of a source volume is required to be created as a result of something that is unspecified in the claim. In Ohran's disclosure, it must have been created because it exists.

Conclusion

11. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Woo H. Choi whose telephone number is (571) 272-4179. The examiner can normally be reached on M-F, 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Reginald Bragdon can be reached on (571) 272-4204. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Woo H. Choi
February 16, 2007